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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,920	04/01/2004	James Albert Davis	038190/251160	9434

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ALSTON & BIRD LLP
BANK OF AMERICA PLAZA
101 SOUTH TRYON STREET, SUITE 4000
CHARLOTTE, NC 28280-4000

EXAMINER

RUDE, TIMOTHY L

ART UNIT	PAPER NUMBER
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2871

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.		Applicant(s)	
	10/815,920		DAVIS, JAMES ALBERT	
	Examiner		Art Unit	
	Timothy L. Rude		2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 9-13 and 15-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 14 is/are rejected.
- 7) ☒ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims

Claim 9 is amended.

Election/Restrictions

Claims 9-13 and 15 now directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Amendment of claim 9 results in limitations drawn to species D, non-elected by Applicant without traverse in the response filed 29 March 2006. Claims 10-13 and 15 are directly or indirectly dependent upon claim 9.

Please note, straight flexible tubing is considered capable of being mounted in a serpentine manner and yet it reads on elected species F. However, a structure wherein the tubing is actually structured in a serpentine manner reads on non-elected species D.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 9-13 and 15 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

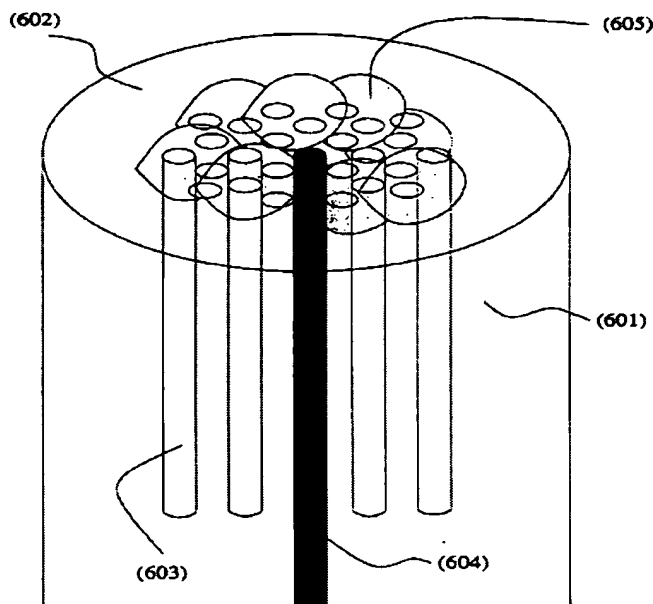
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjarklev et al (Bjarklev) US PG PUB 2005/0111804 A1 in view of Hollister et al (Hollister) US PAT 6,377,591 B1.

As to claim 1, Bjarklev discloses a system (device) for cooling a fiber amplifier, the system comprising: a fiber amplifier assembly [0016] comprising: a longitudinally-extending fiber amplifier; a jacket surrounding the fiber amplifier and extending at least partially longitudinally therealong, wherein the jacket surrounds the fiber amplifier such that the fiber amplifier assembly defines a passage between the jacket and the fiber amplifier for the circulation of coolant therethrough; and a retaining structure disposed within the passage defined by the fiber amplifier assembly for at least partially maintaining a spacing between the fiber amplifier and jacket, e.g., [0148] and [0183].

Fig. 6



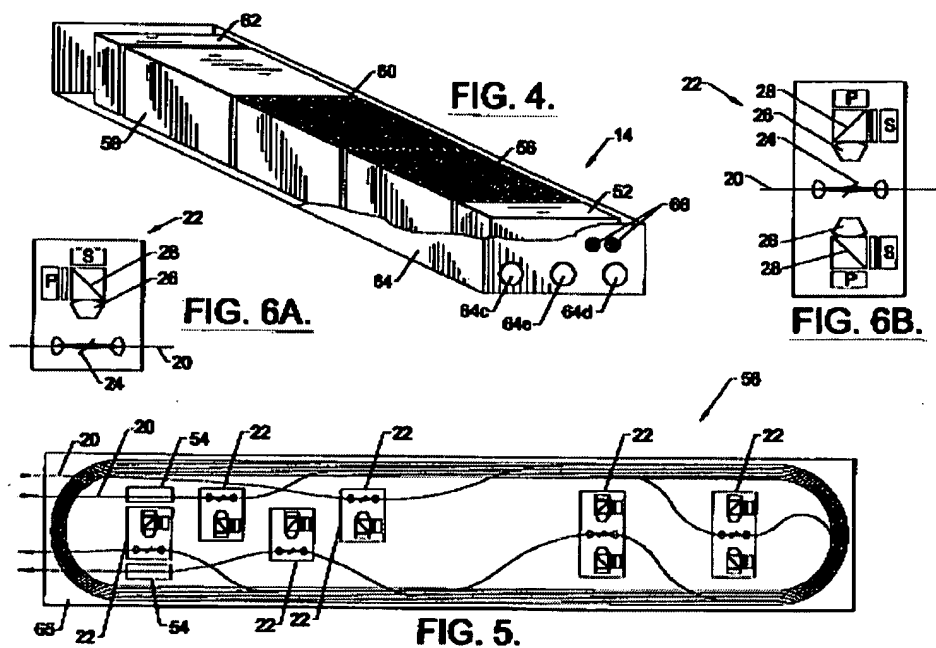
Bjarklev does not explicitly disclose a system wherein the retaining structure and coolant comprise an emulsion of phase change material.

Hollister teaches the use of a micro-encapsulated phase change material [col. 2, line 59 through col. 3, line 4] to improve cooling system performance (better temperature control).

Hollister is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add a phase change material to the retaining structure and the coolant to improve cooling system performance.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Bjarklev with the phase change material of Hollister added to the retaining structure and the coolant to improve cooling system performance.

As to claim 2, Hollister, as combined above, teaches a system according to claim 1 further comprising: a thermal management system capable of circulating coolant through the passage defined between the jacket and fiber amplifier of the fiber amplifier assembly [col. 2, lines 5-25].



As to claim 3, Hollister, as combined above, teaches a system according to claim 2, wherein the thermal management system is capable of placing coolant in thermal communication with the fiber amplifier such that the coolant is capable of carrying heat away from the fiber amplifier, and wherein the thermal management system is capable of rejecting the heat carried away by the coolant [col. 2, line 59 through col. 3, line 4].

As to claim 4, Hollister, as combined above, teaches a system according to claim 3, wherein the thermal management system is capable of placing coolant in thermal communication with the fiber amplifier such that the coolant is capable of at least partially melting to thereby carry heat away from the fiber amplifier, and wherein the thermal management system is capable of condensing at least a portion of the at least partially melted coolant to thereby reject the heat carried away by the coolant [col. 2, line 59 through col. 3, line 4].

As to claim 5, Bjarklev, as combined above, teaches a system according to claim 1, wherein the fiber amplifier assembly defines a passage between the jacket and the fiber amplifier for the circulation of coolant selected to have a refractive index smaller than a refractive index of the fiber amplifier [0022] ~ [0025].

As to claim 6, Hollister, as combined above, teaches a system according to claim 1, wherein the emulsion of phase change material comprises a plurality of phase change materials suspended in a carrier fluid, wherein each phase change material comprises an encapsulated composition [col. 2, line 59 through col. 3, line 4].

As to claim 14, Hollister, as combined above, teaches a system according to claim 6, wherein the fiber amplifier is capable of being mounted in a serpentine manner through the at least one sheet spacer to define a passage between the portions of the

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fiber amplifier for the circulation of coolant comprising an emulsion of phase change material [col. 2, line 59 through col. 3, line 4].

Allowable Subject Matter

Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 7, relevant prior art of record did not disclose, alone or in combination, the system for cooling a fiber amplifier as claimed comprising phase change materials that are positioned within the passage such that the phase change materials remain at least partially stationary.

As to claim 8, it is dependent upon claim 7 with allowable subject matter above.

Response to Arguments

Applicant's arguments filed on 15 December 2006 have been fully considered but they are not persuasive.

Applicant's ONLY substantive arguments are as follows:

(1) Regarding base claim 1, applied prior art does not teach 1) a jacket surrounding the fiber amplifier to thereby define a passage for the circulation of coolant, and 2) further including a retaining structure within the passage for at least partially maintaining spacing between the fiber amplifier and the jacket.

(2) Regarding claim 1, Hollister does not teach or suggest that phase change material itself provides any better cooling system performance.

(3) Regarding claim 1, it would not be necessary to modify the primary reference.

(4) Dependent claims are allowable because they directly or indirectly depend from an allowable base claim.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that the primary reference teaches a structure wherein there is a jacket surrounding the fiber amplifier to thereby define a passage for the circulation of coolant (several passages are shown), and 2) further including a retaining structure within the passage for at least partially maintaining spacing between the fiber amplifier and the jacket (structure maintaining spacing between passages as shown). Please note that Applicant's claims are in comprising format wherein additional

passages are permissible and wherein making integral is not considered patentably distinct. As claimed, there may be several passages for coolant and the jacket may be integral to the retaining structure.

(2) It is respectfully pointed out that Hollister's teaching is directed to a number of satisfactory embodiments for providing superior temperature control such that optical amplification modules can operate independently without producing a thermal signature or without requiring power input or power generation during operation. Clearly one of ordinary skill in the art would understand the teachings of Hollister regarding the advantages of using a phase change material that is well known to have a latent heat value associated with its phase change [property of physics].

(3) It is respectfully pointed out that it is essentially never necessary to modify a primary reference. This is a moot point. Motivation to modify is most often found in the secondary reference. Examiner has considered all of Applicant's arguments and considers the modification of the primary reference in view of the teachings of Hollister to be obvious to one of ordinary skill in the art.

(4) It is respectfully pointed out that in so far as Applicant has not argued rejection(s) of the limitations of dependent claim(s), Applicant has acquiesced said rejection(s).

Any references cited but not applied are relevant to the instant Application.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L. Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Mon-Thurs.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



tlr

Timothy L Rude
Examiner
Art Unit 2871



David Nelms
Supervisory Patent Examiner
Technology Center 2800